**3GPP TSG-WG4 Meeting # 116bis *R4-2514119***

**Prague, CZ, 13 - 17 October 2025**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **19.2.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | draftCR to 38.133 on AI/ML for positioning (Rel. 19) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_AIML\_air-Perf | | | | |  | ***Date:*** | | | 2025-10-03 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | * To update list of acronyms in Chapter 3.3 with the expanded forms of UL SRS-TDCT and UL SRS-TDCP measurements. * To implement report mapping and accuracy requirement for AI/ML based positioning use case 3a. * To implement new clauses for report mapping for UL SRS-TDCT and UL SRS-TDCP measurements for AI/ML based positioning use case 3b. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * List of acronyms in Chapter 3.3 is updated with the expanded forms of UL SRS-TDCT and UL SRS-TDCP measurements. * Changes to existing Chapters 13.1 and 13.2 to implement report mapping for UL-RTOA and implement report mapping and accuracy requirement for gNB Rx-Tx time difference measurements for AI/ML based positioning use case 3a. * New clauses for report mapping for UL SRS-TDCT and UL SRS-TDCP measurements are introduced AI/ML based positioning use case 3b. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * List of acronyms in chapter 3.3 is incomplete. * Report mapping for UL-RTOA and report mapping and accuracy requirement for gNB Rx-Tx time difference measurements for AI/ML based positioning use case 3a remain undefined. * Report mappings for UL SRS-TDCT and UL SRS-TDCP measurements for AI/ML based positioning use case 3b remain undefined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.3, 13.1, 13.2, and new clauses: 13.X and 13.X1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | * Changes 1, 4, and 5 are based on R4-2510760 which was technically endorsed draftCR in RAN4#116. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## **START OF CHANGE 1**

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [11] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [11].

AoA Angle of Arrival

AoD Angle of Departure

ATG Air to Ground

AWGN Additive White Gaussian Noise

BFD Beam Failure Detection

BFD-RS BFD Reference Signal

BLER Block Error Rate

BM-RS Beam Management Reference Signal

BW Bandwidth

BWP Bandwidth Part

CA Carrier Aggregation

CBD Candidate Beam Detection

CBW Channel Bandwidth

CC Component Carrier

CCA Clear Channel Assessment

CCE Control Channel Element

CG-SDT Configured Grant Small Data Transmission

CHO Conditional Handover

CLI Cross Link Interference

CMR Channel Measurement Resource

CN Core Network

CORESET Control Resource Set

CP Cyclic Prefix

CPC Conditional PSCell Change

CSI Channel-State Information

CSI-RS CSI Reference Signal

CSI-RSRP CSI Reference Signal based Reference Signal Received Power

CSI-RSRQ CSI Reference Signal based Reference Signal Received Quality

CSI-SINR CSI Reference Signal based Signal to Noise and Interference Ratio

CSI\_RP Received (linear) average power of the resource elements that carry NR CSI-RS signals and channels, measured at the UE antenna connector

DAPS Dual Active Protocol Stack

DBT Discovery Burst Transmission

DC Dual Connectivity

DCI Downlink Control Information

DL Downlink

DL-AoD Downlink Angle-of-Departure

DL-TDOA Downlink Time Difference Of Arrival

DMRS Demodulation Reference Signal

DPC Delta Power Class

DRX Discontinuous Reception

E-CID Enhanced Cell ID

eDRX Extended DRX

E-UTRA Evolved UTRA

E-UTRAN Evolved UTRAN

EMR Early measurement reporting

EMW Effective measurement window

EMWRP Effective measurement window repetition period

EN-DC E-UTRA-NR Dual Connectivity

FDD Frequency Division Duplex

FH Frequency Hopping

FR Frequency Range

GEO Geostationary Earth Orbit

GNSS Global Navigation Satellite System

GSO Geosynchronous Orbit

HARQ Hybrid Automatic Repeat Request

HO Handover

HST High Speed Train

GAP Refers to any of Measurement Gap, activated Pre-MG and NCSG

IMR Interference Measurement Resource

kHz Kilo Hertz

L1-RSRP Layer 1 RSRP

L1 SL-RSRP Layer 1 Sidelink RSRP which corresponds to PSCCH-RSRP and/or PSSCH-RSRP

LEO Low Earth Orbit

LMF Location Management Function

LPP LTE Positioning Protocol

LTM L1/L2 triggered mobility

MAC Medium Access Control

MCG Master Cell Group

MDT Minimization of Drive Tests

MG Measurement Gap

MGL Measurement Gap Length

MGRP Measurement Gap Repetition Period

MHz Mega Hertz

MIB Master Information Block

ML Measurement Length

MN Master Node

MR-DC Multi-Radio Dual Connectivity

MUSIM Multi-Universal Subscriber Identity Module

NCSG Network Controlled Small Gap

NE-DC NR-E-UTRA Dual Connectivity

NGEN-DC NG-RAN E-UTRA-NR Dual Connectivity

NGSO Non-Geosynchronous Orbit

NR New Radio

NR-DC NR-NR Dual Connectivity

NTN Non-Terrestrial Network

OCNG OFDMA Channel Noise Generator

OFDM Orthogonal Frequency Division Multiplexing

OFDMA Orthogonal Frequency Division Multiple Access

OTDOA Observed Time Difference Of Arrival

PBCH Physical Broadcast Channel

PCC Primary Component Carrier

PCell Primary Cell

PCI Physical Cell Identity

PDCCH Physical Downlink Control Channel

PDSCH Physical Downlink Shared Channel

PLMN Public Land Mobile Network

PRACH Physical RACH

Pre-MG Pre-configured Measurement Gap

ProSe Proximity-based Service

PRB Physical Resource Block

PRP PRS Received Power

PRS Positioning Reference Signal

PRS-RSRP Positioning Reference Signal based Reference Signal Received Power

PPW PRS Processing Window

PPWL PRS Processing Window Length

PPWRP PRS Processing Window Repetition Period

PSBCH Physical Sidelink Broadcast Channel

PSBCH-RSRP Physical Sidelink Broadcast Channel DMRS based Reference Signal Received Power

PSCCH Physical Sidelink Control Channel

PSCCH-RSRP Physical Sidelink Control Channel DMRS based Reference Signal Received Power

PSCell Primary SCell

PSS Primary Synchronization Signal

PSSCH Physical Sidelink Shared Channel

PSSCH-RSRP Physical Sidelink Shared Channel DMRS based Reference Signal Received Power

pTAG Primary Timing Advance Group

PTW Paging Time Window

PUCCH Physical Uplink Control Channel

PUSCH Physical Uplink Shared Channel

QCL Quasi Co-Location

RACH Random Access Channel

RAN Radio Access Network

RAT Radio Access Technology

RF Radio Frequency

RLM Radio Link Monitoring

RLM-RS Reference Signal for RLM

RMC Reference Measurement Channel

RMSI Remaining Minimum System Information

RRC Radio Resource Control

RRH Remote Radio Head

RRM Radio Resource Management

RRT RF Retuning Time

RS Reference Signal

RSCP Reference Signal Carrier Phase

RSCPD Reference Signal Carrier Phase Difference

RSSI Received Signal Strength Indicator

RSRP Reference Signal Received Power

RSRPP Reference Signal Received Path Power

RSRQ Reference Signal Received Quality

RSTD Reference Signal Time Difference

RTD Receive Timing Difference

RTOA Relative Time Of Arrival

RTT Round Trip Time

S-SSB Sidelink Synchronization Signal Block

SSB Synchronization Signal Block

SSB\_RP Received (linear) average power of the resource elements that carry NR SSB signals and channels, measured at the UE antenna connector or radiated interface boundary.

SA Standalone operation mode

SAB Satellite access band

SAN Satellite Access Node

SCC Secondary Component Carrier

SCCH Sidelink Control Channel

SCell Secondary Cell

SCG Secondary Cell Group

SCH Synchronization Channel

SCS Subcarrier Spacing

SCSSSB SSB subcarrier spacing

SDL Supplementary Downlink

SDT Small Data Transmission

SFN System Frame Number

SFTD SFN and Frame Timing Difference

SI System Information

SIB System Information Block

SL Sidelink

SL AoA Sidelink AoA

SL PRS-RSRP Sidelink PRS-based RSRP

SL PRS-RSRPP Sidelink PRS-based RSRPP

SL RSTD Sidelink RSTD

SL RTOA Sidelink RTOA

SL Rx-Tx Sidelink Receive-Transmit time difference

SL-PRP SL-PRS Received Power

SL-PRS Sidelink PRS

SL-RSSI Sidelink Received Signal Strength Indicator

SLPP Sidelink Positioning Protocol

SLSS Sidelink Synchronization Signal

SMTC SSB-based Measurement Timing configuration

SpCell Special Cell

SRS Sounding Reference Signal

SRS-RSRP Sounding Reference Signal based Reference Signal Received Power

SS-RSRP Synchronization Signal based Reference Signal Received Power

SS-RSRQ Synchronization Signal based Reference Signal Received Quality

SS-SINR Synchronization Signal based Signal to Noise and Interference Ratio

SSB Synchronization Signal Block

SSB\_RP Received (linear) average power of the resource elements that carry NR SSB signals and channels, measured at the UE antenna connector.

SSS Secondary Synchronization Signal

sTAG Secondary Timing Advance Group

SUL Supplementary Uplink

TA Timing Advance

TAG Timing Advance Group

TCI Transmission Configuration Indicator

TDCP Time Domain Channel Properties

TDD Time Division Duplex

TDOA Time Difference Of Arrival

TE Test Equipment

TN Terrestrial Network

TRP Transmission-Reception Point

TRS Tracking Reference Signal

TTI Transmission Time Interval

U2N UE-to-Network

U2U UE-to-UE

UE User Equipment

UL Uplink

UL SRS-TDCT Uplink Sounding Reference Signal Time Domain Channel Timing

UL SRS-TDCP Uplink Sounding Reference Signal Time Domain Channel Power

V2X Vehicle-to-Everything service

VIL Visible Interruption Length

VIRP Visible Interruption Repetition Period

VSAT Very Small Aperture Terminal

## **END OF CHANGE 1**

## **START OF CHANGE 2**

## 13.1 UL-RTOA

### 13.1.1 Report mapping

The reporting range of UL Relative Time of Arrival (UL-RTOA), as defined in Clause 5.2.2 of TS 38.215 [4], is defined from -985024Tc to +985024×Tc. The reporting resolution is uniform across the reporting range and is defined as T = Tc×2k where k is selected by gNB from the set {-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5}.

Tc is defined in TS 38.211 [6].

LMF provides a recommended resolution parameter, *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35]. gNB selects parameter k based on *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35] and informs the LMF.

The mapping of measured/inferred quantity for each reporting resolution (k) is defined in table 13.1.1-1 to table 13.1.1-12.

Table 13.1.1-1: Measurement report mapping for k=0

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_0000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_0000001 | -985024 ≤ UL\_RTOA < -985023 | Tc |
| UL\_RTOA\_0000002 | -985023 ≤ UL\_RTOA < -985022 | Tc |
| … | … | … |
| UL\_RTOA\_0985023 | -2 ≤ UL\_RTOA < -1 | Tc |
| UL\_RTOA\_0985024 | -1 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_0985025 | 0 < UL\_RTOA ≤ 1 | Tc |
| UL\_RTOA\_0985026 | 1 < UL\_RTOA ≤ 2 | Tc |
| UL\_RTOA\_0985027 | 2 < UL\_RTOA ≤ 3 | Tc |
| … | … | … |
| UL\_RTOA\_1970048 | 985023 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_1970049 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-2: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_000001 | -985024 ≤ UL\_RTOA < -985022 | Tc |
| UL\_RTOA\_000002 | -985022 ≤ UL\_RTOA < -985020 | Tc |
| … | … | … |
| UL\_RTOA\_492511 | -4 ≤ UL\_RTOA < -2 | Tc |
| UL\_RTOA\_492512 | -2 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_492513 | 0 < UL\_RTOA ≤ 2 | Tc |
| UL\_RTOA\_492514 | 2 < UL\_RTOA ≤ 4 | Tc |
| UL\_RTOA\_492515 | 4 < UL\_RTOA ≤ 6 | Tc |
| … | … | … |
| UL\_RTOA\_985024 | 985022 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_985025 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-3: Measurement report mapping for k=2

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_000001 | -985024 ≤ UL\_RTOA < -985020 | Tc |
| UL\_RTOA\_000002 | -985020 ≤ UL\_RTOA < -985018 | Tc |
| … | … | … |
| UL\_RTOA\_246255 | -8 ≤ UL\_RTOA < -4 | Tc |
| UL\_RTOA\_246256 | -4 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_246257 | 0 < UL\_RTOA ≤ 4 | Tc |
| UL\_RTOA\_246258 | 4 < UL\_RTOA ≤ 8 | Tc |
| UL\_RTOA\_246259 | 8 < UL\_RTOA ≤ 12 | Tc |
| … | … | … |
| UL\_RTOA\_492512 | 985020 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_492513 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-4: Measurement report mapping for k=3

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_000001 | -985024 ≤ UL\_RTOA < -985016 | Tc |
| UL\_RTOA\_000002 | -985016 ≤ UL\_RTOA < -985008 | Tc |
| … | … | … |
| UL\_RTOA\_123127 | -16 ≤ UL\_RTOA < -8 | Tc |
| UL\_RTOA\_123128 | -8 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_123129 | 0 < UL\_RTOA ≤ 8 | Tc |
| UL\_RTOA\_123130 | 8 < UL\_RTOA ≤ 16 | Tc |
| UL\_RTOA\_123131 | 16 < UL\_RTOA ≤ 24 | Tc |
| … | … | … |
| UL\_RTOA\_246256 | 985016 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_246257 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-5: Measurement report mapping for k=4

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_000001 | -985024 ≤ UL\_RTOA < -985008 | Tc |
| UL\_RTOA\_000002 | -985008 ≤ UL\_RTOA < -984992 | Tc |
| … | … | … |
| UL\_RTOA\_061563 | -32 ≤ UL\_RTOA < -16 | Tc |
| UL\_RTOA\_061564 | -16 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_061565 | 0 < UL\_RTOA ≤ 16 | Tc |
| UL\_RTOA\_061566 | 16 < UL\_RTOA ≤ 32 | Tc |
| UL\_RTOA\_061567 | 32 < UL\_RTOA ≤ 48 | Tc |
| … | … | … |
| UL\_RTOA\_123128 | 985008 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_123129 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-6: Measurement report mapping for k=5

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_00000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_00001 | -985024 ≤ UL\_RTOA < -984992 | Tc |
| UL\_RTOA\_00002 | -984992 ≤ UL\_RTOA < -984960 | Tc |
| … | … | … |
| UL\_RTOA\_30781 | -64 ≤ UL\_RTOA < -32 | Tc |
| UL\_RTOA\_30782 | -32 ≤ UL\_RTOA ≤ 0 | Tc |
| UL\_RTOA\_30783 | 0 < UL\_RTOA ≤ 32 | Tc |
| UL\_RTOA\_30784 | 32 < UL\_RTOA ≤ 64 | Tc |
| UL\_RTOA\_30785 | 64 < UL\_RTOA ≤ 96 | Tc |
| … | … | … |
| UL\_RTOA\_61564 | 984992 < UL\_RTOA ≤ 985024 | Tc |
| UL\_RTOA\_61565 | 985024 < UL\_RTOA | Tc |

Table 13.1.1-7: Measurement report mapping for k=-1

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| UL\_RTOA\_0000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_0000001 | -985024 ≤ UL\_RTOA < -985023.5 | Tc |
| UL\_RTOA\_0000002 | -985023.5 ≤ UL\_RTOA < -985023 | Tc |
| … | … | … |
| UL\_RTOA\_1970048 | -0.5 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_1970049 | 0 ≤ UL\_RTOA < 0.5 | Tc |
| … | … | … |
| UL\_RTOA\_3940095 | 985023 ≤ UL\_RTOA < 985023.5 | Tc |
| UL\_RTOA\_3940096 | 985023.5 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_3940097 | 985024 ≤ UL\_RTOA | Tc |

Table 13.1.1-8: Measurement report mapping for k=-2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| UL\_RTOA\_0000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_0000001 | -985024 ≤ UL\_RTOA < -985023.75 | Tc |
| UL\_RTOA\_0000002 | -985023.75 ≤ UL\_RTOA < -985023.5 | Tc |
| … | … | … |
| UL\_RTOA\_3940096 | -0.25 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_3940097 | 0 ≤ UL\_RTOA < 0.25 | Tc |
| … | … | … |
| UL\_RTOA\_7880191 | 985023.5 ≤ UL\_RTOA < 985023.75 | Tc |
| UL\_RTOA\_7880192 | 985023.75 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_7880193 | 985024 ≤ UL\_RTOA | Tc |

Table 13.1.1-9: Measurement report mapping for k=-3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| UL\_RTOA\_00000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_00000001 | -985024 ≤ UL\_RTOA < -985023.875 | Tc |
| UL\_RTOA\_00000002 | -985023.875 ≤ UL\_RTOA < -985023.75 | Tc |
| … | … | … |
| UL\_RTOA\_07880192 | -0.125 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_07880193 | 0 ≤ UL\_RTOA < 0.125 | Tc |
| … | … | … |
| UL\_RTOA\_15760383 | 985023.75 ≤ UL\_RTOA < 985023.875 | Tc |
| UL\_RTOA\_15760384 | 985023.875 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_15760385 | 985024 ≤ UL\_RTOA | Tc |

Table 13.1.1-10: Measurement report mapping for k=-4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| UL\_RTOA\_0000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_0000001 | -985024 ≤ UL\_RTOA < -985023.9375 | Tc |
| UL\_RTOA\_0000002 | -985023.9375 ≤ UL\_RTOA < -985023.875 | Tc |
| … | … | … |
| UL\_RTOA\_15760384 | -0.0625 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_15760385 | 0 ≤ UL\_RTOA < 0.0625 | Tc |
| … | … | … |
| UL\_RTOA\_31520767 | 985023.875 ≤ UL\_RTOA < 985023.9375 | Tc |
| UL\_RTOA\_31520768 | 985023.9375 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_31520769 | 985024 ≤ UL\_RTOA | Tc |

Table 13.1.1-11: Measurement report mapping for k=-5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| UL\_RTOA\_00000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_00000001 | -985024 ≤ UL\_RTOA < -985023.9688 | Tc |
| UL\_RTOA\_00000002 | -985023.9688 ≤ UL\_RTOA < -985023.9375 | Tc |
| … | … | … |
| UL\_RTOA\_31520768 | -0.0312 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_31520769 | 0 ≤ UL\_RTOA < 0.0312 | Tc |
| … | … | … |
| UL\_RTOA\_63041535 | 985023.9375 ≤ UL\_RTOA < 985023.9688 | Tc |
| UL\_RTOA\_63041536 | 985023.9688 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_63041537 | 985024 ≤ UL\_RTOA | Tc |

Table 13.1.1-12: Measurement report mapping for k=-6

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| UL\_RTOA\_000000000 | -985024 > UL\_RTOA | Tc |
| UL\_RTOA\_000000001 | -985024 ≤ UL\_RTOA < -985023.9844 | Tc |
| UL\_RTOA\_000000002 | -985023.9844 ≤ UL\_RTOA < -985023.9688 | Tc |
| … | … | … |
| UL\_RTOA\_063041536 | -0.0156 ≤ UL\_RTOA < 0 | Tc |
| UL\_RTOA\_063041537 | 0 ≤ UL\_RTOA < 0.0156 | Tc |
| … | … | … |
| UL\_RTOA\_126083071 | 985023.9688 ≤ UL\_RTOA < 985023.9844 | Tc |
| UL\_RTOA\_126083072 | 985023.9844 ≤ UL\_RTOA < 985024 | Tc |
| UL\_RTOA\_126083073 | 985024 ≤ UL\_RTOA | Tc |

### 13.1.1A Additional Path Report Mapping for UL-RTOA

The reporting range of additional path reporting for UL Relative Time of Arrival (UL-RTOA), as defined in Clause 5.2.2 of TS 38.215 [4], is defined from -8175×Tc to +8175×Tc. The reporting resolution is uniform across the reporting range and is defined as T = Tc×2k where k is selected by gNB from the set {-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5}.

Tc is defined in TS 38.211 [6].

LMF provides a recommended resolution parameter, *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35]. gNB selects parameter k based on *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35] and informs the LMF.

The mapping of measured/inferred quantity for each reporting resolution (k) is defined in Table 13.1.1A-1 to Table 13.1.1A-12.

Table 13.1.1A-1: Measurement report mapping for k=0

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174 | Tc |
| path\_00002 | -8174 ≤ Δpath < -8173 | Tc |
| … | … | … |
| path\_08175 | -1 ≤ Δpath < 0 | Tc |
| path\_08176 | 0 ≤ Δpath < 1 | Tc |
| … | … | … |
| path\_ 16349 | 8173 ≤ Δpath < 8174 | Tc |
| path\_ 16350 | 8174 ≤ Δpath < 8175 | Tc |
| path\_ 16351 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-2: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8175 | Tc |
| path\_0001 | -8175 ≤ Δpath < -8173 | Tc |
| path\_0002 | -8173 ≤ Δpath < -8171 | Tc |
| … | … | … |
| path\_4088 | -1 ≤ Δpath < 1 | Tc |
| … | … | … |
| path\_8174 | 8171 ≤ Δpath < 8173 | Tc |
| path\_8175 | 8173 ≤ Δpath < 8175 | Tc |
| path\_8176 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-3: Measurement report mapping for k=2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8174 | Tc |
| path\_0001 | -8174 ≤ Δpath < -8170 | Tc |
| path\_0002 | -8170 ≤ Δpath < -8166 | Tc |
| … | … | … |
| path\_2044 | -2 ≤ Δpath < 2 | Tc |
| … | … | … |
| path\_4086 | 8166 ≤ Δpath < 8170 | Tc |
| path\_4087 | 8170 ≤ Δpath < 8174 | Tc |
| path\_4088 | 8174 ≤ Δpath | Tc |

Table 13.1.1A-4: Measurement report mapping for k=3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8172 | Tc |
| path\_0001 | -8172 ≤ Δpath < -8164 | Tc |
| path\_0002 | -8164 ≤ Δpath < -8156 | Tc |
| … | … | … |
| path\_1022 | -4 ≤ Δpath < 4 | Tc |
| … | … | … |
| path\_2042 | 8156 ≤ Δpath < 8164 | Tc |
| path\_2043 | 8164 ≤ Δpath < 8172 | Tc |
| path\_2044 | 8172 ≤ Δpath | Tc |

Table 13.1.1A-5: Measurement report mapping for k=4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8168 | Tc |
| path\_0001 | -8168 ≤ Δpath < -8152 | Tc |
| path\_0002 | -8152 ≤ Δpath < -8136 | Tc |
| … | … | … |
| path\_511 | -8 ≤ Δpath < 8 | Tc |
| … | … | … |
| path\_1020 | 8136 ≤ Δpath < 8152 | Tc |
| path\_1021 | 8152 ≤ Δpath < 8168 | Tc |
| path\_1022 | 8168 ≤ Δpath | Tc |

Table 13.1.1A-6: Measurement report mapping for k=5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_000 | Δpath < -8160 | Tc |
| path\_001 | -8160 ≤ Δpath < -8128 | Tc |
| path\_002 | -8128 ≤ Δpath < -8096 | Tc |
| … | … | … |
| path\_256 | 0 ≤ Δpath < 32 | Tc |
| … | … | … |
| path\_509 | 8096 ≤ Δpath < 8128 | Tc |
| path\_510 | 8128 ≤ Δpath < 8160 | Tc |
| path\_511 | 8160 ≤ Δpath | Tc |

Table 13.1.1A-7: Measurement report mapping for k=-1

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174.5 | Tc |
| path\_00002 | -8174.5 ≤ Δpath < -8174 | Tc |
| … | … | … |
| path\_16350 | -0.5 ≤ Δpath < 0 | Tc |
| path\_16351 | 0 ≤ Δpath < 0.5 | Tc |
| … | … | … |
| path\_32699 | 8174 ≤ Δpath < 8174.5 | Tc |
| path\_32700 | 8174.5 ≤ Δpath < 8175 | Tc |
| path\_32701 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-8: Measurement report mapping for k=-2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174.75 | Tc |
| path\_00002 | -8174.75 ≤ Δpath < -8174.5 | Tc |
| … | … | … |
| path\_32700 | -0.25 ≤ Δpath < 0 | Tc |
| path\_32701 | 0 ≤ Δpath < 0.25 | Tc |
| … | … | … |
| path\_65399 | 8174.5 ≤ Δpath < 8174.75 | Tc |
| path\_65400 | 8174.75 ≤ Δpath < 8175 | Tc |
| path\_65401 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-9: Measurement report mapping for k=-3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.875 | Tc |
| path\_000002 | -8174.875 ≤ Δpath < -8174.75 | Tc |
| … | … | … |
| path\_065400 | -0.125 ≤ Δpath < 0 | Tc |
| path\_065401 | 0 ≤ Δpath < 0.125 | Tc |
| … | … | … |
| path\_130799 | 8174.75 ≤ Δpath < 8174.875 | Tc |
| path\_130800 | 8174.875 ≤ Δpath < 8175 | Tc |
| path\_130801 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-10: Measurement report mapping for k=-4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.9375 | Tc |
| path\_000002 | -8174.9375 ≤ Δpath < -8174.875 | Tc |
| … | … | … |
| path\_130800 | -0.0625 ≤ Δpath < 0 | Tc |
| path\_130801 | 0 ≤ Δpath < 0.0625 | Tc |
| … | … | … |
| path\_261599 | 8174.875 ≤ Δpath < 8174.9375 | Tc |
| path\_261600 | 8174.9375 ≤ Δpath < 8175 | Tc |
| path\_261601 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-11: Measurement report mapping for k=-5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.9688 | Tc |
| path\_000002 | -8174.9688 ≤ Δpath < -8174.9375 | Tc |
| … | … | … |
| path\_261600 | -0.0312 ≤ Δpath < 0 | Tc |
| path\_261601 | 0 ≤ Δpath < 0.0312 | Tc |
| … | … | … |
| path\_523199 | 8174.9375 ≤ Δpath < 8174.9688 | Tc |
| path\_523200 | 8174.9688 ≤ Δpath < 8175 | Tc |
| path\_523201 | 8175 ≤ Δpath | Tc |

Table 13.1.1A-12: Measurement report mapping for k=-6

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_0000000 | Δpath < -8175 | Tc |
| path\_0000001 | -8175 ≤ Δpath < -8174.9844 | Tc |
| path\_0000002 | -8174.9844 ≤ Δpath < -8174.9688 | Tc |
| … | … | … |
| path\_0523200 | -0.0156 ≤ Δpath < 0 | Tc |
| path\_0523201 | 0 ≤ Δpath < 0.0156 | Tc |
| … | … | … |
| path\_1046399 | 8174.9688 ≤ Δpath < 8174.9844 | Tc |
| path\_1046400 | 8174.9844 ≤ Δpath < 8175 | Tc |
| path\_1046401 | 8175 ≤ Δpath | Tc |

## **END OF CHANGE 2**

## **START OF CHANGE 3**

## 13.2 gNB Rx-Tx time difference

### 13.2.1 Report mapping

The reporting range of gNB Rx-Tx time difference, as defined in Clause 5.2.3 of TS 38.215 [4], is defined from -985024Tc to +985024×Tc. The reporting resolution is uniform across the reporting range and is defined as T = Tc×2k where k is selected by gNB from the set {-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5}.

Tc is defined in TS 38.211 [6].

LMF provides a recommended resolution parameter, *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35]. gNB selects parameter k based on *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35] and informs the LMF.

The mapping of measured/inferred quantity for each reporting resolution (k) is defined in table 13.2.1-1 to table 13.2.1-12.

Table 13.2.1-1: Measurement report mapping for k=0

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_0000000 | -985024 > RX-TX | Tc |
| RX-TX\_0000001 | -985024 ≤ RX-TX < -985023 | Tc |
| RX-TX\_0000002 | -985023 ≤ RX-TX < -985022 | Tc |
| … | … | … |
| RX-TX\_0985023 | -2 ≤ RX-TX < -1 | Tc |
| RX-TX\_0985024 | -1 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_0985025 | 0 < RX-TX ≤ 1 | Tc |
| RX-TX\_0985026 | 1 < RX-TX ≤ 2 | Tc |
| RX-TX\_0985027 | 2 < RX-TX ≤ 3 | Tc |
| … | … | … |
| RX-TX\_1970048 | 985023 < RX-TX ≤ 985024 | Tc |
| RX-TX\_1970049 | 985024 < RX-TX | Tc |

Table 13.2.1-2: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_000000 | -985024 > RX-TX | Tc |
| RX-TX\_000001 | -985024 ≤ RX-TX < -985022 | Tc |
| RX-TX\_000002 | -985022 ≤ RX-TX < -985020 | Tc |
| … | … | … |
| RX-TX\_492511 | -4 ≤ RX-TX < -2 | Tc |
| RX-TX\_492512 | -2 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_492513 | 0 < RX-TX ≤ 2 | Tc |
| RX-TX\_492514 | 2 < RX-TX ≤ 4 | Tc |
| RX-TX\_492515 | 4 < RX-TX ≤ 6 | Tc |
| … | … | … |
| RX-TX\_985024 | 985022 < RX-TX ≤ 985024 | Tc |
| RX-TX\_985025 | 985024 < RX-TX | Tc |

Table 13.2.1-3: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_000000 | -985024 > RX-TX | Tc |
| RX-TX\_000001 | -985024 ≤ RX-TX < -985020 | Tc |
| RX-TX\_000002 | -985020 ≤ RX-TX < -985018 | Tc |
| … | … | … |
| RX-TX\_246255 | -8 ≤ RX-TX < -4 | Tc |
| RX-TX\_246256 | -4 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_246257 | 0 < RX-TX ≤ 4 | Tc |
| RX-TX\_246258 | 4 < RX-TX ≤ 8 | Tc |
| RX-TX\_246259 | 8 < RX-TX ≤ 12 | Tc |
| … | … | … |
| RX-TX\_492512 | 985020 < RX-TX ≤ 985024 | Tc |
| RX-TX\_492513 | 985024 < RX-TX | Tc |

Table 13.2.1-4: Measurement report mapping for k=3

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_0000 | -985024 > RX-TX | Tc |
| RX-TX\_0001 | -985024 ≤ RX-TX < -985016 | Tc |
| RX-TX\_0002 | -985016 ≤ RX-TX < -985008 | Tc |
| … | … | … |
| RX-TX\_123127 | -16 ≤ RX-TX < -8 | Tc |
| RX-TX\_123128 | -8 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_123129 | 0 < RX-TX ≤ 8 | Tc |
| RX-TX\_123130 | 8 < RX-TX ≤ 16 | Tc |
| RX-TX\_123131 | 16 < RX-TX ≤ 24 | Tc |
| … | … | … |
| RX-TX\_246256 | 985016 < RX-TX ≤ 985024 | Tc |
| RX-TX\_246257 | 985024 < RX-TX | Tc |

Table 13.2.1-5: Measurement report mapping for k=4

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_000000 | -985024 > RX-TX | Tc |
| RX-TX\_000001 | -985024 ≤ RX-TX < -985008 | Tc |
| RX-TX\_000002 | -985008 ≤ RX-TX < -984992 | Tc |
| … | … | … |
| RX-TX\_061563 | -32 ≤ RX-TX < -16 | Tc |
| RX-TX\_061564 | -16 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_061565 | 0 < RX-TX ≤ 16 | Tc |
| RX-TX\_061566 | 16 < RX-TX ≤ 32 | Tc |
| RX-TX\_061567 | 32 < RX-TX ≤ 48 | Tc |
| … | … | … |
| RX-TX\_123128 | 985008 < RX-TX ≤ 985024 | Tc |
| RX-TX\_123129 | 985024 < RX-TX | Tc |

Table 13.2.1-6: Measurement report mapping for k=5

|  |  |  |
| --- | --- | --- |
| Reported Value | Measured Quantity Value | Unit |
| RX-TX\_00000 | -985024 > RX-TX | Tc |
| RX-TX\_00001 | -985024 ≤ RX-TX < -984992 | Tc |
| RX-TX\_00002 | -984992 ≤ RX-TX < -984960 | Tc |
| … | … | … |
| RX-TX\_30781 | -64 ≤ RX-TX < -32 | Tc |
| RX-TX\_30782 | -32 ≤ RX-TX ≤ 0 | Tc |
| RX-TX\_30783 | 0 < RX-TX ≤ 32 | Tc |
| RX-TX\_30784 | 32 < RX-TX ≤ 64 | Tc |
| RX-TX\_30785 | 64 < RX-TX ≤ 96 | Tc |
| … | … | … |
| RX-TX\_61564 | 984992 < RX-TX ≤ 985024 | Tc |
| RX-TX\_61565 | 985024 < RX-TX | Tc |

Table 13.2.1-7: Measurement report mapping for k=-1

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_0000000 | -985024 > RX-TX | Tc |
| RX-TX\_0000001 | -985024  RX-TX < -985023.5 | Tc |
| RX-TX\_0000002 | -985023.5  RX-TX < -985023 | Tc |
|  |  | … |
| RX-TX\_1970048 | -0.5  RX-TX < 0 | Tc |
| RX-TX\_1970049 | 0  RX-TX < 0.5 | Tc |
| … | … | … |
| RX-TX\_3940095 | 985023  RX-TX < 985023.5 | Tc |
| RX-TX\_3940096 | 985023.5  RX-TX < 985024 | Tc |
| RX-TX\_3940097 | 985024  RX-TX | Tc |

Table 13.2.1-8: Measurement report mapping for k=-2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_0000000 | -985024 > RX-TX | Tc |
| RX-TX\_0000001 | -985024  RX-TX < -985023.75 | Tc |
| RX-TX\_0000002 | -985023.75  RX-TX -985023.5 | Tc |
|  |  | … |
| RX-TX\_3940096 | -0.25  RX-TX < 0 | Tc |
| RX-TX\_3940097 | 0  RX-TX < 0.25 | Tc |
| … | … | … |
| RX-TX\_7880191 | 985023.5  RX-TX < 985023.75 | Tc |
| RX-TX\_7880192 | 985023.75  RX-TX < 985024 | Tc |
| RX-TX\_7880193 | 985024  RX-TX | Tc |

Table 13.2.1-9: Measurement report mapping for k=-3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_0000000 | -985024 > RX-TX | Tc |
| RX-TX\_0000001 | -985024  RX-TX < -985023.875 | Tc |
| RX-TX\_0000002 | -985023.875  RX-TX -985023.75 | Tc |
|  |  | … |
| RX-TX\_7880192 | -0.125  RX-TX < 0 | Tc |
| RX-TX\_7880193 | 0  RX-TX < 0.125 | Tc |
| … | … | … |
| RX-TX\_15760383 | 985023.75  RX-TX < 985023.875 | Tc |
| RX-TX\_15760384 | 985023.875  RX-TX < 985024 | Tc |
| RX-TX\_15760385 | 985024  RX-TX | Tc |

Table 13.2.1-10: Measurement report mapping for k=-4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_0000000 | -985024 > RX-TX | Tc |
| RX-TX\_0000001 | -985024  RX-TX < -985023.9375 | Tc |
| RX-TX\_0000002 | -985023.9375  RX-TX -985023.875 | Tc |
|  |  | … |
| RX-TX\_15760384 | -0.0625  RX-TX < 0 | Tc |
| RX-TX\_15760385 | 0  RX-TX < 0.0625 | Tc |
| … | … | … |
| RX-TX\_31520767 | 985023.875  RX-TX < 985023.9375 | Tc |
| RX-TX\_31520768 | 985023.9375  RX-TX < 985024 | Tc |
| RX-TX\_31520769 | 985024  RX-TX | Tc |

Table 13.2.1-11: Measurement report mapping for k=-5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_00000000 | -985024 > RX-TX | Tc |
| RX-TX\_00000001 | -985024  RX-TX < -985023.9688 | Tc |
| RX-TX\_00000002 | -985023.9688  RX-TX -985023.9375 | Tc |
|  |  | … |
| RX-TX\_31520768 | -0.0312  RX-TX < 0 | Tc |
| RX-TX\_31520769 | 0  RX-TX < 0.0312 | Tc |
| … | … | … |
| RX-TX\_63041535 | 985023.9375  RX-TX < 985023.9688 | Tc |
| RX-TX\_63041536 | 985023.9688  RX-TX < 985024 | Tc |
| RX-TX\_63041537 | 985024  RX-TX | Tc |

Table 13.2.1-12: Measurement report mapping for k=-6

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value | Measured Quantity Value | Unit |
| RX-TX\_00000000 | -985024 > RX-TX | Tc |
| RX-TX\_00000001 | -985024  RX-TX < -985023.9844 | Tc |
| RX-TX\_00000002 | -985023.9844  RX-TX -985023.9688 | Tc |
|  |  | … |
| RX-TX\_63041536 | -0.0156  RX-TX < 0 | Tc |
| RX-TX\_63041537 | 0  RX-TX < 0.0156 | Tc |
| … | … | … |
| RX-TX\_126083071 | 985023.9688  RX-TX < 985023.9844 | Tc |
| RX-TX\_126083072 | 985023.9844  RX-TX < 985024 | Tc |
| RX-TX\_126083073 | 985024  RX-TX | Tc |

### 13.2.1A Additional Path Report Mapping for gNB Rx-Tx

The reporting range of additional path for gNB Rx-Tx time difference, as defined in Clause 5.2.3 of TS 38.215 [4], is defined from -8175×Tc to 8175×Tc. The reporting resolution is uniform across the reporting range and is defined as T = Tc×2k where k is selected by gNB from the set {-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5}.

Tc is defined in TS 38.211 [6].

LMF provides a recommended resolution parameter, *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35]. gNB selects parameter k based on *timingReportingGranularityFactor* or *timingReportingGranularityFactorExtended* [35] and informs the LMF.

The mapping of measured/inferred quantity for each reporting resolution (k) is defined in table 13.2.1A-1 to table 13.2.1A-12.

Table 13.2.1A-1: Measurement report mapping for k=0

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174 | Tc |
| path\_00002 | -8174 ≤ Δpath < -8173 | Tc |
| … | … | … |
| path\_08175 | -1 ≤ Δpath < 0 | Tc |
| path\_08176 | 0 ≤ Δpath < 1 | Tc |
| … | … | … |
| path\_ 16349 | 8173 ≤ Δpath < 8174 | Tc |
| path\_ 16350 | 8174 ≤ Δpath < 8175 | Tc |
| path\_ 16351 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-2: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8175 | Tc |
| path\_0001 | -8175 ≤ Δpath < -8173 | Tc |
| path\_0002 | -8173 ≤ Δpath < -8171 | Tc |
| … | … | … |
| path\_4088 | -1 ≤ Δpath < 1 | Tc |
| … | … | … |
| path\_8174 | 8171 ≤ Δpath < 8173 | Tc |
| path\_8175 | 8173 ≤ Δpath < 8175 | Tc |
| path\_8176 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-3: Measurement report mapping for k=2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8174 | Tc |
| path\_0001 | -8174 ≤ Δpath < -8170 | Tc |
| path\_0002 | -8170 ≤ Δpath < -8166 | Tc |
| … | … | … |
| path\_2044 | -2 ≤ Δpath < 2 | Tc |
| … | … | … |
| path\_4086 | 8166 ≤ Δpath < 8170 | Tc |
| path\_4087 | 8170 ≤ Δpath < 8174 | Tc |
| path\_4088 | 8174 ≤ Δpath | Tc |

Table 13.2.1A-4: Measurement report mapping for k=3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8172 | Tc |
| path\_0001 | -8172 ≤ Δpath < -8164 | Tc |
| path\_0002 | -8164 ≤ Δpath < -8156 | Tc |
| … | … | … |
| path\_1022 | -4 ≤ Δpath < 4 | Tc |
| … | … | … |
| path\_2042 | 8156 ≤ Δpath < 8164 | Tc |
| path\_2043 | 8164 ≤ Δpath < 8172 | Tc |
| path\_2044 | 8172 ≤ Δpath | Tc |

Table 13.2.1A-5: Measurement report mapping for k=4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_0000 | Δpath < -8168 | Tc |
| path\_0001 | -8168 ≤ Δpath < -8152 | Tc |
| path\_0002 | -8152 ≤ Δpath < -8136 | Tc |
| … | … | … |
| path\_511 | -8 ≤ Δpath < 8 | Tc |
| … | … | … |
| path\_1020 | 8136 ≤ Δpath < 8152 | Tc |
| path\_1021 | 8152 ≤ Δpath < 8168 | Tc |
| path\_1022 | 8168 ≤ Δpath | Tc |

Table 13.2.1A-6: Measurement report mapping for k=5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
| path\_000 | Δpath < -8160 | Tc |
| path\_001 | -8160 ≤ Δpath < -8128 | Tc |
| path\_002 | -8128 ≤ Δpath < -8096 | Tc |
| … | … | … |
| path\_256 | 0 ≤ Δpath < 32 | Tc |
| … | … | … |
| path\_509 | 8096 ≤ Δpath < 8128 | Tc |
| path\_510 | 8128 ≤ Δpath < 8160 | Tc |
| path\_511 | 8160 ≤ Δpath | Tc |

Table 13.2.1A-7: Measurement report mapping for k=-1

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174.5 | Tc |
| path\_00002 | -8174.5 ≤ Δpath < -8174 | Tc |
| … | … | … |
| path\_16350 | -0.5 ≤ Δpath < 0 | Tc |
| path\_16351 | 0 ≤ Δpath < 0.5 | Tc |
| … | … | … |
| path\_32699 | 8174 ≤ Δpath < 8174.5 | Tc |
| path\_32700 | 8174.5 ≤ Δpath < 8175 | Tc |
| path\_32701 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-8: Measurement report mapping for k=-2

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_00000 | Δpath < -8175 | Tc |
| path\_00001 | -8175 ≤ Δpath < -8174.75 | Tc |
| path\_00002 | -8174.75 ≤ Δpath < -8174.5 | Tc |
| … | … | … |
| path\_32700 | -0.25 ≤ Δpath < 0 | Tc |
| path\_32701 | 0 ≤ Δpath < 0.25 | Tc |
| … | … | … |
| path\_65399 | 8174.5 ≤ Δpath < 8174.75 | Tc |
| path\_65400 | 8174.75 ≤ Δpath < 8175 | Tc |
| path\_65401 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-9: Measurement report mapping for k=-3

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.875 | Tc |
| path\_000002 | -8174.875 ≤ Δpath < -8174.75 | Tc |
| … | … | … |
| path\_065400 | -0.125 ≤ Δpath < 0 | Tc |
| path\_065401 | 0 ≤ Δpath < 0.125 | Tc |
| … | … | … |
| path\_130799 | 8174.75 ≤ Δpath < 8174.875 | Tc |
| path\_130800 | 8174.875 ≤ Δpath < 8175 | Tc |
| path\_130801 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-10: Measurement report mapping for k=-4

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.9375 | Tc |
| path\_000002 | -8174.9375 ≤ Δpath < -8174.875 | Tc |
| … | … | … |
| path\_130800 | -0.0625 ≤ Δpath < 0 | Tc |
| path\_130801 | 0 ≤ Δpath < 0.0625 | Tc |
| … | … | … |
| path\_261599 | 8174.875 ≤ Δpath < 8174.9375 | Tc |
| path\_261600 | 8174.9375 ≤ Δpath < 8175 | Tc |
| path\_261601 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-11: Measurement report mapping for k=-5

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.9688 | Tc |
| path\_000002 | -8174.9688 ≤ Δpath < -8174.9375 | Tc |
| … | … | … |
| path\_261600 | -0.0312 ≤ Δpath < 0 | Tc |
| path\_261601 | 0 ≤ Δpath < 0.0312 | Tc |
| … | … | … |
| path\_523199 | 8174.9375 ≤ Δpath < 8174.9688 | Tc |
| path\_523200 | 8174.9688 ≤ Δpath < 8175 | Tc |
| path\_523201 | 8175 ≤ Δpath | Tc |

Table 13.2.1A-12: Measurement report mapping for k=-6

|  |  |  |
| --- | --- | --- |
| Reported Quantity Value,  path\_i | Measured Quantity Value,  Δpath | Unit |
|
| path\_000000 | Δpath < -8175 | Tc |
| path\_000001 | -8175 ≤ Δpath < -8174.9844 | Tc |
| path\_000002 | -8174.9844 ≤ Δpath < -8174.9688 | Tc |
| … | … | … |
| path\_523200 | -0.0156 ≤ Δpath < 0 | Tc |
| path\_523201 | 0 ≤ Δpath < 0.0156 | Tc |
| … | … | … |
| path\_1046399 | 8174.9688≤ Δpath < 8174.9844 | Tc |
| path\_1046400 | 8174.9844 ≤ Δpath < 8175 | Tc |
| path\_1046401 | 8175 ≤ Δpath | Tc |

### 13.2.2 Measurement Accuracy Requirements

#### 13.2.2.1 Introduction

This clause defines accuracy requirements for measured/inferred gNB Rx-Tx time difference measurement in FR1 and FR2. The requirements are applicable for gNB supporting gNB Rx-Tx time difference measurement. The gNB, which declares the support for gNB Rx-Tx time difference measurement also declares that it meets gNB Rx-Tx time difference accuracy requirements at least for one side condition Ês/Iot ≥ +3 dB or Ês/Iot ≥ -13 dB.

13.2.2.2 Requirements

The accuracy requirements for measured/inferred gNB Rx-Tx time difference measurement shall be within ±(X+Y) Tc under the following conditions:

- AWGN propagation conditions.

- The measured signals are in the directions covered by RoAoA of OTA reference sensitivity requirements for gNB type 1-O and 2-O BS

where

- X is defined in table 13.2.2.2-1 for gNB types 1-C, 1-H and 1-O and in table 13.2.2.2-2 for gNB type 2-O.

- Y is declared by manufacturer and can be different for different gNB types 1-C, 1-H, 1-O and 2-O.

NOTE: The measurement accuracy requirements in table 13.2.2.2-1 and table 13.2.2.2-2 are defined under an assumption that gNB is not mandated to perform receive beam sweeping.

Table 13.2.2.2-1: gNB Rx-Tx time difference absolute accuracy in FR1 for gNB type 1-C, 1-H and 1-O

|  |  |  |  |
| --- | --- | --- | --- |
| Accuracy | SRS Ês/Iot | SCS | SRS bandwidth range |
| Unit: Tc | Unit: dB | Unit: kHz | Unit: PRB |
| 123 | ≥ -13 | 15 | 44 ≤ BW ≤ 84 |
| 48 | 88 ≤ BW ≤ 168 |
| 17 | 176 ≤ BW |
| 122 | ≥ +3 | 24 ≤ BW ≤ 40 |
| 62 | 44 ≤ BW ≤ 84 |
| 32 | 88 ≤ BW ≤ 168 |
| 16 | 176 ≤ BW |
| 42 | ≥ -13 | 30 | 48 ≤ BW ≤ 84 |
| 24 | 88 ≤ BW ≤ 168 |
| 8 | 176 ≤ BW |
| 32 | ≥ +3 | 48 ≤ BW ≤ 84 |
| 17 | 88 ≤ BW ≤ 168 |
| 9 | 176 ≤ BW |
| 21 | ≥ -13 | 60 | 48 ≤ BW ≤ 84 |
| 12 | 88 ≤ BW |
| 16 | ≥ +3 | 48 ≤ BW ≤ 84 |
| 9 | 88 ≤ BW |

Table 13.2.2.2-2: gNB Rx-Tx time difference absolute accuracy in FR2 for gNB type 2-O

|  |  |  |  |
| --- | --- | --- | --- |
| Accuracy | SRS Ês/Iot | SCS | SRS bandwidth range |
| Unit: Tc | Unit: dB | Unit: kHz | Unit: PRB |
| 9 | ≥ -13 | 60 | 132 ≤ BW ≤ 168 |
| 8 | 176 ≤ BW |
| 9 | ≥ +3 | 132 ≤ BW ≤ 168 |
| 8 | 176 ≤ BW |
| 22 | ≥ -13 | 120 | 32 ≤ BW ≤ 40 |
| 15 | 44 ≤ BW ≤ 84 |
| 8 | 88 ≤ BW |
| 16 | ≥ +3 | 32 ≤ BW ≤ 40 |
| 9 | 44 ≤ BW ≤ 84 |
| 8 | 88 ≤ BW |

## **END OF CHANGE 3**

## **START OF CHANGE 4**

## 13.X UL SRS-TDCT measurement

### 13.X.1 Report mapping

The reporting range of UL SRS-TDCT measurement, as defined in Clause 5.2.9 of TS 38.215 [4], is defined from -985024×Tc to +985024×Tc. The reporting resolution is uniform across the reporting range and is defined as T = Tc×2k, where k is selected by gNB from the set {0, 1, 2, 3, 4, 5}.

Tc is defined in TS 38.211 [6].

LMF provides a recommended resolution parameter, *timingReportingGranularityFactor* [35]. gNB selects parameter k based on *timingReportingGranularityFactor* [35] and informs the LMF.

The mapping of measured quantity for each reporting resolution (k) is defined in table 13.X.1-1 to table 13.X.1-6.

Table 13.X.1-1: Measurement report mapping for k=0

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_0000000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_0000001 | -985024 ≤ SRS-TDCT < -985023 | Tc |
| SRS\_TDCT\_0000002 | -985023 ≤ SRS-TDCT < -985022 | Tc |
| … | … | … |
| SRS\_TDCT\_0985023 | -2 ≤ SRS-TDCT < -1 | Tc |
| SRS\_TDCT\_0985024 | -1 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_0985025 | 0 < SRS-TDCT ≤ 1 | Tc |
| SRS\_TDCT\_0985026 | 1 < SRS-TDCT ≤ 2 | Tc |
| SRS\_TDCT\_0985027 | 2 < SRS-TDCT ≤ 3 | Tc |
| … | … | … |
| SRS\_TDCT\_1970048 | 985023 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_1970049 | 985024 < SRS-TDCT | Tc |

Table 13.X.1-2: Measurement report mapping for k=1

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_000000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_000001 | -985024 ≤ SRS-TDCT < -985022 | Tc |
| SRS\_TDCT\_000002 | -985022 ≤ SRS-TDCT < -985020 | Tc |
| … | … | … |
| SRS\_TDCT\_492511 | -4 ≤ SRS-TDCT < -2 | Tc |
| SRS\_TDCT\_492512 | -2 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_492513 | 0 < SRS-TDCT ≤ 2 | Tc |
| SRS\_TDCT\_492514 | 2 < SRS-TDCT ≤ 4 | Tc |
| SRS\_TDCT\_492515 | 4 < SRS-TDCT ≤ 6 | Tc |
| … | … | … |
| SRS\_TDCT\_985024 | 985022 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_985025 | 985024 < SRS-TDCT | Tc |

Table 13.X.1-3: Measurement report mapping for k=2

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_000000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_000001 | -985024 ≤ SRS-TDCT < -985020 | Tc |
| SRS\_TDCT\_000002 | -985020 ≤ SRS-TDCT < -985018 | Tc |
| … | … | … |
| SRS\_TDCT\_246255 | -8 ≤ SRS-TDCT < -4 | Tc |
| SRS\_TDCT\_246256 | -4 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_246257 | 0 < SRS-TDCT ≤ 4 | Tc |
| SRS\_TDCT\_246258 | 4 < SRS-TDCT ≤ 8 | Tc |
| SRS\_TDCT\_246259 | 8 < SRS-TDCT ≤ 12 | Tc |
| … | … | … |
| SRS\_TDCT\_492512 | 985020 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_492513 | 985024 < SRS-TDCT | Tc |

Table 13.X.1-4: Measurement report mapping for k=3

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_000000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_000001 | -985024 ≤ SRS-TDCT < -985016 | Tc |
| SRS\_TDCT\_000002 | -985016 ≤ SRS-TDCT < -985008 | Tc |
| … | … | … |
| SRS\_TDCT\_123127 | -16 ≤ SRS-TDCT < -8 | Tc |
| SRS\_TDCT\_123128 | -8 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_123129 | 0 < SRS-TDCT ≤ 8 | Tc |
| SRS\_TDCT\_123130 | 8 < SRS-TDCT ≤ 16 | Tc |
| SRS\_TDCT\_123131 | 16 < SRS-TDCT ≤ 24 | Tc |
| … | … | … |
| SRS\_TDCT\_246256 | 985016 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_246257 | 985024 < SRS-TDCT | Tc |

Table 13.X.1-5: Measurement report mapping for k=4

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_000000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_000001 | -985024 ≤ SRS-TDCT < -985008 | Tc |
| SRS\_TDCT\_000002 | -985008 ≤ SRS-TDCT < -984992 | Tc |
| … | … | … |
| SRS\_TDCT\_061563 | -32 ≤ SRS-TDCT < -16 | Tc |
| SRS\_TDCT\_061564 | -16 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_061565 | 0 < SRS-TDCT ≤ 16 | Tc |
| SRS\_TDCT\_061566 | 16 < SRS-TDCT ≤ 32 | Tc |
| SRS\_TDCT\_061567 | 32 < SRS-TDCT ≤ 48 | Tc |
| … | … | … |
| SRS\_TDCT\_123128 | 985008 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_123129 | 985024 < SRS-TDCT | Tc |

Table 13.X.1-6: Measurement report mapping for k=5

|  |  |  |
| --- | --- | --- |
| **Reported Value** | **Measured Quantity Value** | **Unit** |
| SRS\_TDCT\_00000 | -985024 > SRS-TDCT | Tc |
| SRS\_TDCT\_00001 | -985024 ≤ SRS-TDCT < -984992 | Tc |
| SRS\_TDCT\_00002 | -984992 ≤ SRS-TDCT < -984960 | Tc |
| … | … | … |
| SRS\_TDCT\_30781 | -64 ≤ SRS-TDCT < -32 | Tc |
| SRS\_TDCT\_30782 | -32 ≤ SRS-TDCT ≤ 0 | Tc |
| SRS\_TDCT\_30783 | 0 < SRS-TDCT ≤ 32 | Tc |
| SRS\_TDCT\_30784 | 32 < SRS-TDCT ≤ 64 | Tc |
| SRS\_TDCT\_30785 | 64 < SRS-TDCT ≤ 96 | Tc |
| … | … | … |
| SRS\_TDCT\_61564 | 984992 < SRS-TDCT ≤ 985024 | Tc |
| SRS\_TDCT\_61565 | 985024 < SRS-TDCT | Tc |

## **END OF CHANGE 4**

## **START OF CHANGE 5**

## 13.X1 UL SRS-TDCP measurement

### 13.X1.1 Report mapping

The reporting range of UL SRS-TDCP measurement, as defined in clause 5.2.10 of 38.215 [4], is defined from -156 dBm to -31 dBm with resolution 1 dB.

The mapping of measured quantity is defined in table 13.X1.1-1.

Table 13.X1.1-1: UL SRS-TDCP report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value | Unit |
| SRS\_TDCP\_000 | SRS-TDCP < -156 | dBm |
| SRS\_TDCP\_001 | -156 ≤ SRS-TDCP < -155 | dBm |
| SRS\_TDCP\_002 | -155 ≤ SRS-TDCP < -154 | dBm |
| SRS\_TDCP\_003 | -154 ≤ SRS-TDCP < -153 | dBm |
| SRS\_TDCP\_004 | -153 ≤ SRS-TDCP < -152 | dBm |
| SRS\_TDCP\_005 | -152 ≤ SRS-TDCP < -151 | dBm |
| SRS\_TDCP\_006 | -151 ≤ SRS-TDCP < -150 | dBm |
| SRS\_TDCP\_007 | -150 ≤ SRS-TDCP < -149 | dBm |
| SRS\_TDCP\_008 | -149 ≤ SRS-TDCP < -148 | dBm |
| SRS\_TDCP\_009 | -148 ≤ SRS-TDCP < -147 | dBm |
| SRS\_TDCP\_010 | -147 ≤ SRS-TDCP < -146 | dBm |
| SRS\_TDCP\_011 | -146 ≤ SRS-TDCP < -145 | dBm |
| SRS\_TDCP\_012 | -145 ≤ SRS-TDCP < -144 | dBm |
| SRS\_TDCP\_013 | -144 ≤ SRS-TDCP < -143 | dBm |
| SRS\_TDCP\_014 | -143 ≤ SRS-TDCP < -142 | dBm |
| SRS\_TDCP\_015 | -142 ≤ SRS-TDCP < -141 | dBm |
| SRS\_TDCP\_016 | -141 ≤ SRS-TDCP < -140 | dBm |
| SRS\_TDCP\_017 | -140 ≤ SRS-TDCP < -139 | dBm |
| SRS\_TDCP\_018 | -139 ≤ SRS-TDCP < -138 | dBm |
| … | … | … |
| SRS\_TDCP\_111 | -46 ≤ SRS-TDCP < -45 | dBm |
| SRS\_TDCP\_112 | -45 ≤ SRS-TDCP < -44 | dBm |
| SRS\_TDCP\_113 | -44 ≤ SRS-TDCP < -43 | dBm |
| SRS\_TDCP\_114 | -43 ≤ SRS-TDCP < -42 | dBm |
| SRS\_TDCP\_115 | -42 ≤ SRS-TDCP < -41 | dBm |
| SRS\_TDCP\_116 | -41 ≤ SRS-TDCP < -40 | dBm |
| SRS\_TDCP\_117 | -40 ≤ SRS-TDCP < -39 | dBm |
| SRS\_TDCP\_118 | -39 ≤ SRS-TDCP < -38 | dBm |
| SRS\_TDCP\_119 | -38 ≤ SRS-TDCP < -37 | dBm |
| SRS\_TDCP\_120 | -37 ≤ SRS-TDCP < -36 | dBm |
| SRS\_TDCP\_121 | -36 ≤ SRS-TDCP < -35 | dBm |
| SRS\_TDCP\_122 | -35 ≤ SRS-TDCP < -34 | dBm |
| SRS\_TDCP\_123 | -34 ≤ SRS-TDCP < -33 | dBm |
| SRS\_TDCP\_124 | -33 ≤ SRS-TDCP < -32 | dBm |
| SRS\_TDCP\_125 | -32 ≤ SRS-TDCP < -31 | dBm |
| SRS\_TDCP\_126 | -31 ≤ SRS-TDCP | dBm |

## **END OF CHANGE 5**